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- Teachers' Orientations to Learning and Teaching
- Predictive Value of ACE Examination
- Sex Differences in Intelligence of Mentally Retarded
- Children's Concepts of Psychologists and Psychiatrists
- Relationships Between Two Types of Verbal Ability

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THE EDITORS SAY:

Hunches and Research

J. R. Shannon

There is a good way and a bad way to do anything. The good way to attack a research problem is to think it through before starting to gather data; the bad way is to use a trial-and-error process. In fact, research has been aptly defined as a systematic and foresighted way of seeking answers to problems.

Help from Kilpatrick

John Dewey, in his memorable classic, *How We Think*, analyzed the process of problem solving into four major steps. William H. Kilpatrick, Dewey's foremost disciple and the man who translated Dewey to English, analyzed the process into seven steps.[1] The two analyses differ only in degree of discrimination. Kilpatrick broke some of Dewey's steps into smaller elements. It might be wise to break Kilpatrick's analysis into more detailed elements, especially his sixth step. The analysis outlined below is an adaptation of Kilpatrick's, and with the same seven steps.

1. One has an impulse to act.
2. In proceeding to act, he encounters a difficulty.
3. He analyzes or diagnoses the difficulty to determine its exact nature.
4. He lists all possible answers.
5. He considers the implications of each possible answer and decides which possible answer is most probably the right one.
6. He experiments, or in other ways gathers data pertinent to the most probable answer, treats the data, and draws conclusions.
7. He announces the result.

A chicken placed in a strange pen has an impulse to act; he wants out. In proceeding to act, the chicken encounters a difficulty—the fence. The chicken jumps right over steps 3, 4, and 5—the steps which require the best brains—and starts experimenting. He pokes his head through every

(Continued on page 190)

[1] William H. Kilpatrick, *Foundation of Method.* New York: The Macmillan Company, 1925, pp. 242-243.

The editors considered this article by J. R. Shannon an appropriate editorial for this issue of the CJER which initiates a new school year. The materials for the manuscript came from the author's years of experience in doing, directing, and teaching research. Dr. Shannon, Emeritus Professor, Indiana State Teachers College, Terre Haute, Indiana, is well-known through his extensive writing in the field of education. After serving as a teacher, principal, superintendent, director of research, and college teacher in the mid-west, Dr. Shannon became the Coordinator of Graduate Studies at Sacramento State College (1948-52).

Teachers' Orientations to Learning and Teaching Related to Contemporary Theories of Learning

THEODOR F. NAUMANN AND JOHN PIERCE-JONES

Modern educational psychology texts—eg., Cronbach (1) and Stephens (10)—devote considerable space to theoretical analyses of learning. Moreover, a principal aim in psychology courses for teachers is to increase their understanding of learning. Probably most such courses introduce teachers to the chief classes of contemporary learning theories identified by Hilgard (4), and seek to enable teachers to discern relationships between these broad theoretical viewpoints and the activities of teachers and pupils in schools. It is not meant to imply, of course, that the psychological training of teachers is, or should be, directed toward creating "faith" in one or another variant of learning theory. Nevertheless, many teachers probably come to view learning in ways more or less resembling stimulus-response conceptions or field-Gestalt theories.

Problem

The present investigation had the following purposes: (1) to develop a verbal self-report inventory for use in measuring teachers' beliefs, i.e., theoretical orientations regarding learning, on the one hand, and their orientations concerning desirable teaching methods on the other; (2) to estimate the degree and the direction of relationships between theoretical

John Pierce-Jones, associate professor in the department of educational psychology at the University of Texas for the past three years, is also a Research Psychologist with the Laboratory of Human Behavior. From 1950 to 1956 he was an assistant professor of psychology and education at the University of Oregon in Eugene. Dr. Pierce-Jones' educational background includes a B.A. degree from the University of California, Santa Barbara, 1946; M.A. degree from the University of California, Berkeley, 1949; and Ph.D. degree from U.C.B. in 1953.

Theodor F. Naumann has just joined the staff of Central Washington College of Education in Ellensburg, Washington, as associate professor of psychology, and is also serving as consulting psychologist for the Ellensburg School District. He was formerly consulting psychologist at the Oregon Fairview Home and professor at Warner Pacific College. Dr. Naumann received his Ph.D degree from the University of Oregon in 1956, before which time he obtained his M.A. degree from Oregon State College in 1954, his B.A. and B.Th. degrees from the Pacific Bible College, Portland, in 1952 and 1953 respectively, and an M.E. degree from the State College of Engineering in Essen, Germany, in 1940.

The article is based upon Dr. Naumann's doctoral dissertation, which was done under Dr. Pierce-Jones direction.

orientations and teaching methods orientations. Underlying these purposes, there existed the assumption that teachers' conceptual orientations about the nature of learning and regarding desirable teaching methods are organized belief systems measurable by self-report. In addition, it was hypothesized that positive relationships obtain between theoretical and teaching methods orientations referable to the same major class of learning theories (e.g., stimulus-response), and that pairs of theoretical and pedagogical orientations derived from different theoretical viewpoints are unrelated or, alternately, negatively related. These two hypotheses derive from the proposition that an individual's conceptual and action tendencies are relatively consistent one with another. It is also an obvious possibility, however, that teachers' orientations may be eclectic, inconsistent, and tentative.

Procedures

Measuring Theoretical and Methods Orientations

From various representative sources [Hartman (3), Hilgard (4), Hull (5), Koffka (6), Leeper (7), Miller and Dollard (8), Thorndike (11), Wertheimer (12), Woodworth (13)], 161 statements were selected as bases for preparing items representing stimulus-response (SR) and field or Gestalt (F-G) theories for inclusion in a Teaching-Learning Inventory (TLI). Among the major axioms of these chief classes of learning theories which were used as guides in item writing and selection were: (1) the connectionist's thesis that learning is connecting appropriate responses with given stimuli; (2) behaviorism's principle that reinforcement, or need reduction, is a fundamental condition for learning; and (3) the Gestalt tenet that the whole determines the properties of the parts.

TLI Beliefs About Learning (i.e., theoretical orientations) items were written in impersonal form and in language believed to be both faithful to substantive sources and comprehensible to teachers (e.g., "Punishment is useful only to subdue rather than to eliminate improper behavior"). Item responses were obtained on five-point scales for which 5 (Always True) and 1 (Never True) were polar values. Teaching methods orientations items were presented in the first person singular (e.g., "I arrange learning situations so that they definitely help to produce thoughts and behavior which can be rewarded") and were responded to with self-ratings on five-point relative frequency of use scales for which 5 (Always) and 1 (Never) were polar values. Of 161 items in the preliminary version of the TLI, 94 referred to theoretical principles (or beliefs) regarding learning and 67 referred to teaching methods. Fifty-five items represented S-R Beliefs and 40 represented S-R Methods; 39 items presented F-G Beliefs while another 27 items depicted F-G Methods. Thus, four orientations scales were represented in the TLI; raw scores on these scales were obtained by summing the values of response-scale positions selected by subjects.

The preliminary version of the TLI was administered to 80 elementary

and secondary school teachers in Minnesota, Oregon, and Washington; all subjects had at least one year of teaching experience in addition to professional training. The results obtained for this sample were used in evaluating items in the four TLI scales by the "discriminatory power" technique suggested by Murphy and Likert (9). Subsequently, the best 20 items were selected from each preliminary TLI scale, sometimes slightly edited in the light of pilot experience, and these 80 items constituted the revised TLI used in this study. For the two methods orientation scales—S-R Methods and F-G Methods—the item response system and scoring method were retained as originally used. Items in the two theoretical orientations scales —S-R Beliefs and F-G Beliefs—called for responses on scales of comparative agreement ranging from 1 (Disagree Strongly) to 7 (Agree Strongly), with the neutral or zero position omitted to encourage commitment on each item. Possible raw scores could range from 20 to 100 on the methods orientation scales and from 20 to 140 on theoretical orientations. For any given scale, a high score represented relative agreement with (Beliefs) or employment of (Methods) items in the scale.

Sampling

The revised TLI was administered to a new sample of 30 elementary and 40 secondary teachers in the state of Oregon. Of the elementary teachers, 9 were women reporting a median of 11.3 years of teaching experience; the median teaching experience for the 21 male elementary teachers was 3.3 years. Of the secondary teachers, 32 were males with a median of 3.7 years of experience; 8 female secondary teachers reported a median of 13.0 years of teaching experience. This sample was almost certainly unrepresentative of Oregon teachers; it consisted mainly of men, or of women with much teaching experience, and most of these teachers were persons enrolled for graduate study in university psychology and education courses. For purposes of this study, however, a sample of relatively thoroughly trained and experienced teachers might readily be preferred to a more representative group; such persons could well be more thoughtful and informed teachers having clearer, more stable orientations than others with regard to learning and teaching. Nevertheless, there are obvious strictures on the size and composition of this sample, and they must be recognized in interpreting results to be reported. Generalizations from this sample to teachers-in-general are clearly unwarranted.

Methods of Analysis

Reliability estimates for the four TLI scales were made by means of a split-halves method described by Guttman (2). In determining scale reliability coefficients, scores for the total sample were used. Coefficients of correlation between all pairs of TLI scales were computed by the product-moment method. The intercorrelations among the scales were needed not only to serve the usual psychometric function of determining the relative

independence of measures, but to test the two hypotheses earlier stated regarding relationships between teachers' theoretical and pedagogical orientations.

Results

The results obtained are presented in Tables I and II. The reliability coefficients for the four TLI scales were clustered closely around a median of .75. The correlations found between all pairs of TLI scales, shown in Table II, appear somewhat higher for elementary than for secondary teachers. For the elementary teachers, the correlations between S-R Beliefs and S-R Methods, between F-G Beliefs and F-G Methods, between S-R

TABLE I

Teaching-Learning Inventory Raw Score Means, Standard Deviations, and Scale Reliabilities for Seventy Elementary and Secondary School Teachers

Scale	*Mean*	*SD*	*rII*
S-R Beliefs	99.8	13.3	.77
F-G Beliefs	108.5	11.9	.75
S-R Methods	78.0	7.2	.75
F-G Methods	76.3	7.4	.74

TABLE II

Product-Moment Correlations Between Pairs of Teaching-Learning Inventory Scales for Elementary (N 30) and Secondary (N 40) Teachers

Scales		*F-G Beliefs*	*S-R Methods*	*F-G Methods*
S-R Beliefs	Elementary	.48**	.46*	.25
	Secondary	.19	.35*	–.08
F-G Beliefs	Elementary		.09	.59**
	Secondary		–.09	.28
S-R Methods	Elementary			.60**
	Secondary			.40**

*Significant at .05 level.
**Significant at .01 level.

Beliefs and F-G Beliefs, and between S-R Methods and F-G Methods are positive and statistically greater than zero at, or beyond, the .05 level of confidence. For the secondary teachers, the correlations between S-R

Beliefs and S-R Methods, and between S-R Methods and F-G Methods are positive and significantly greater than zero at, or beyond, the .05 level. The correlation between secondary teachers' F-G Beliefs and F-G Methods scores attained statistical significance at the .10 level.

Discussion

Substantial success has attended efforts to devise reliable self-report scales intended to measure teachers' tendencies (1) to explain learning in stimulus-response or in field-Gestalt theoretical terms and (2) to view their teaching methods in terms of practices referable to these major classes of learning theories. It seems probable that lengthening the scales or testing the TLI in larger, experientially more heterogeneous samples would produce reliability coefficients higher than the moderate ones obtained in this study.

To evaluate the validity of the TLI scales obviously involves extremely complex considerations. In part, as is often the case in attitude measurement, validity must be inferred on the basis of the procedures employed in developing scales. Thus viewed, it appears that the TLI scales devised in this study should have considerable validity as measures of the orientations they were intended to measure.

More subtle considerations of the validities of TLI scales are possible when the intercorrelations shown in Table II are examined. It will be remembered that it was hypothesized that statistically significant positive correlations would be observed between theoretical orientations (Beliefs) about learning and teaching methods orientations derived from the same major class of learning theory, and, further, that correlations between other pairs of theoretical and teaching methods orientations should not be significantly greater than zero or should, alternatively, show significant negative relationships. Study of the matrices presented in Table II shows that statistically significant positive correlations were indeed obtained between beliefs about learning and teaching methods orientations related to the same class of learning theories, although a possible exception to this conclusion occurred among secondary teachers for whom a correlation of .28 was found between Gestalt Methods and Gestalt Beliefs. But even the latter correlation is in the predicted direction and approaches statistical significance at the .05 level. The empirical evidence, then, appears to support the hypothesis that theoretical and teaching methods orientations referable to the same major class of learning theories are positively related. Such findings lend credence to the inference that TLI scales possess an important degree of validity. It must be noted, however, that no evidence is offered to show that teachers' orientations scores are related to direct measures of teaching behavior or independent measures of orientations.

If the correlations among the remaining TLI scales were not significantly

greater than zero, or were negative, it might be concluded reasonably that the conceptual and pedagogical orientations of the teachers studied were both similar and not contradictory. In fact, however, positive correlations, significant at the .01 level, occurred between S-R Methods and F-G Methods scales for both elementary and secondary teachers, and, for elementary teachers, the S-R Beliefs and F-G Beliefs scales were correlated significantly and positively. It must be inferred, therefore, that these teachers tended to endorse certain S-R *and* certain F-G principles of learning and teaching practices derived from these basic classes of learning theory. In interpreting these relationships, which contradict one of the hypotheses of this study, it should be considered that stimulus-response and field-Gestalt learning theories need not be viewed as antithetical frames-of-reference (Hilgard, 4). If this is the case, the major classes of learning theories probably do not imply clearly differentiated sets of teaching practices. Hence, the apparently contradictory relationships found in this study may mean that these teachers are essentially (although not necessarily intelligently) eclectic in their conceptual and practical orientations. Such a conclusion should not be drawn, of course, in the absence of answers to further significant questions. For example, have teachers somehow developed variant conceptions of learning and of related methodologies which overlap both stimulus-response and field-Gestalt theories and their derivatives? Are teachers' concepts of learning and their teaching practices internally consistent and consistent with one another? The usual recommendation that necessary additional research be undertaken must be made once more.

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The Generalization of Prestige Among Adolescent Boys

EVAN R. KEISLAR

It has been well established that a person's opinions on an issue may be influenced by the opinions of a prestiged individual. For example, in one of these studies of "prestige suggestion," Kelman and Hovland (1) found that high school students were more strongly influenced in their opinions on a juvenile delinquency question when a statement on the problem was attributed to a judge of integrity than when it was attributed to a "shady" character.

The problem for this study was to discover how far from the field in which prestige was established such influence by a prestiged individual would be extended, specifically, whether prestige of an adolescent boy, established in one area of ability, generalizes far enough for his peers to be effective in influencing their personal preferences. This problem of prestige generalization is not clarified by evidence which indicates that adolescent leaders in one activity are more likely than not to be leaders in other activities (4, 5), since leadership in one situation is not attributable to leadership elsewhere. More appropriate is the experimental evidence presented by Mausner (2) and Miller and Dollard (3) that prestige established for one task generalizes to closely related tasks.

The specific hypothesis of this study was that adolescent boys will imitate on a preference test one of their peers who has demonstrated high achievement on a test of information, judged to be important to adolescent boys, more than they will imitate a peer who has shown low achievement on such an information test.

The subjects– sixty ninth-grade boys, with Otis scores over 100, enrolled

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in a suburban junior high school—were tested three at a time, each subject in a separate booth to protect his identity. Multiple-choice items were projected on a screen in front of the booths so as to be visible to all. Each subject responded by pressing one of four buttons. In each booth were three panels of numbers from one to four which could be illuminated from behind to indicate the number of an answer given to the projected item. One panel, in the center, showed the subject his own answers; the other two panels, one on each side of each booth, presumably revealed the answers given by each of the other two boys. Green lights above each panel were used to indicate when the answer shown by that panel was correct. All lights in the side panels and all scoring of items were controlled, through a bank of relays, by means of a pre-punched master card read by an IBM key punch. The responses of the subjects to each item were recorded by the punch.

Procedure

Each subject first responded to 38 informational four-choice items dealing with sports, automobiles, and science, a green light indicating to the subject when his answer was correct. Following the subject's response to each item, the side lights showed the answers presumably given by each of the other two subjects, hereafter called the "models." In reality all such answers of the models were given in accordance with a predetermined schedule punched in the master card. One model was "made" to get 36 items correct, the other only six. At the end of this series, subjects were asked to indicate on a sheet of paper which of the three persons did the best and which did the poorest on the test. The scores on this test actually made by the subjects ranged from 13 to 29. All subjects except one properly ranked the three "persons" present.

A set of 26 two-choice items, adapted from Edwards' Personal Preference Schedule, was then projected. Each subject was privately instructed to give his answer to each item first; he was informed that one of the other two persons would give his answer last, after this boy had been shown the answers of the two persons "going first." In this "control test" the subject was shown no lights in the side panel boxes.

The same 26 items were presented a second time. Each boy was now privately instructed to wait until he saw the "others' answers" before responding. On this final test, therefore, each subject could be influenced by the responses of either model. The models on this final test were assigned the same choice on six of the 26 items; they "gave" different responses on 20 of the items.

There were in all 20 groups of three subjects each. For ten of these groups the model with high scores on the information test was on the left while the model with low scores was on the right. The reverse was true of

the other ten groups. For each subject the number of responses on the 20 critical PPS items identical with the responses of the prestiged model was obtained for both the control test and the final test. Since each item involved only two choices, identity with the prestiged model indicates lack of identity with the nonprestiged model.

Results

The mean identity score, in comparison with the prestiged model, on the control test was 9.6 with a standard deviation of 2.5. The corresponding mean on the final test was 10.3 with a standard deviation of 2.6. The correlation between these two sets of identity scores for the 60 cases was .55.

The results of a mixed-design analysis of variance are given in Table I, where T indicates the identity scores on the two tests and P refers to the

TABLE I

Results of Analysis of Variance

Source	*d.f.*	*Sum Squares*	*Mean Squares*
Between S's	59	584.7	
P	1	6.5	6.5
Error (b)	58	578.2	10.0
Within S's	60	183.0	
T	1	14.7	14.7
TP	1	10.8	10.8
Error (w)	58	157.5	2.7

$$F_{TP} = \frac{10.8}{2.7} = 4.0 \qquad p > .05$$

$$F_{T} = \frac{14.7}{2.7} = 5.4 \qquad p < .05$$

position of the prestiged model, either on the left or right. Although the interaction of the tests with position just falls short of significance, the findings probably reflect a reading position preference on the final test; the "person" on the left was imitated slightly more than the "person" on the right for the sample as a whole. The difference between the identity scores of the two tests is clearly significant at the .05 level. At this level of confidence the hypothesis is supported.

Conclusion

We may conclude that, under these conditions, adolescent boys will imitate on a preference test one of their peers who has demonstrated high achievement on a test of information, judged to be important to adolescents, more than they will imitate a peer who has shown low achievement on such an information test.

The effect observed in this study, while not large, did extend from one realm of these adolescent boys' lives to a completely different one. Some support is therefore given to the view that adolescents do influence, by virtue of prestige in one area, their peers in other fields. It is possible that with other types of personal opinions, less stable than these preferences, a greater effect might be noted. Finally, a more "lifelike" model of many social situations could be obtained with these laboratory conditions by providing social reinforcements, signs of approval or disapproval from the models, for the responses given by the subject during the final test; with more "at stake," the subjects' expressions of preference might be more affected.

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The Predictive Value of the American Council On Education Psychological Examination For College Freshmen

NORMAN B. HENDERSON AND EVELYN MALUEG

One of the major functions of a college counselor is to aid the student to make a realistic choice of his vocational goal and to help him select the required courses to meet his objective. Any experienced counselor is well aware that determining where a student's abilities and interests lie and helping him to select college work consistent with such an appraisal is fraught with obstacles. One of these is the predictive value, the validity, of academic aptitude tests.

Los Angeles City College counselors administer to all entering students the American Council on Education College Entrance Examination as one guidance tool. How effective this test is as a predictor of college success is the problem of this study.

History of the Problem

Lack of Ethnic Control. Our study differs in several important ways from previous studies of the predictability of college aptitude examinations. First, in our study there has been an attempt to control the language and cultural factors which invalidate test results for certain groups of people. The invalidity of intelligence tests for foreign groups has been demonstrated by studies of the relationship between intelligence test scores and academic achievement (6, 10). These studies have shown that while intelligence scores are predictive of scholastic success for students in general, they are

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Evelyn Malueg is a Counselor at Los Angeles City College, a position she has held since 1949. She had formerly taught in the Business Administration Department of that institution for fifteen years, before which time she taught at Garfield High School in Los Angeles. A graduate of University of California, Los Angeles, Mrs. Malueg obtained her M.S. degree in 1934 from the University of Southern California.

not necessarily predictive of achievement for pupils with a foreign language and foreign cultural background (8). Since intelligence tests scores are not applicable to students with a foreign background, one might suspect the inapplicability of an aptitude examination for college students whose native language is other than English and whose family background is other than American.

Even though a study comparing college entrance examination scores of different ethnic groups has been made (11), no study reviewed by the authors controlled the effects of foreign language background in predicting successes from college entrance examination scores. Evidently, in past similar studies students with a foreign language and cultural handicap on tests have been included as a part of the group studied. Therefore in these studies data have been included which are contaminated by an uncontrolled factor of the foreign language test handicap. If there are students with such a handicap in a group, one would expect correlation coefficients to be lower than when they were excluded.

Differentiating Between Terminal Junior College and Four-Year College Preparatory Students. The second way in which our study differs from others is marked by the distinction made in our study between two classifications of junior college students. While Brown (3) made a study of the value of the ACE in predicting success in junior college, his study made no distinction between junior college students who were taking a two-year terminal program and junior college students who were taking a program of preparation for the upper division of a regular four-year college.

Since the function of the two types of education are dissimilar and apparently demand different kinds of ability, distinction should be made between these two types of students. One might expect a college aptitude examination which was designed to predict success in a liberal arts curriculum or a traditional academic curriculum to correlate more highly with grades of four-year college preparatory students than with grades of two-year terminal junior college students.

Predicting For Different Courses. Since our study compares the predictability of college entrance examination scores in several different subject areas, the results of other studies doing the same are pertinent. Wallace (15) made a study of the prediction of grades in specific college courses. His study shows a range of correlations of total ACE scores with over-all college success between .61 to .31. These correlation ratios vary with the college, with the group of students, and with the subject-matter field. Hoerres and O'Dea (9) show that correlations of total ACE scores with college grades in art are as low as .06 whereas correlations between total ACE scores and grade point averages in physics range as high as .54.

Frederiksen and Schrader (7) point out the difference in predictive value of the ACE for students taking different courses. They found a difference

in the level of predictability of the ACE for liberal arts students, engineering students, agricultural students, and business students. Their study also shows that the ACE predicts better for veterans than for non-veterans. The median validity coefficients in their study were .49 for male veterans and .45 for male non-veterans. Furthermore, their study reveals that high school standing as determined by rank in class correlated higher with college grades than did the ACE. The mean of these correlations was .53 for male veterans and .60 for male non-veterans. Nevertheless, predictions of college success are better with a combination of ACE scores and rank in high school. Multiple correlations of ACE scores and mean high school standing with college grades ranged from .76 to .53 for male non-veterans and .72 to .53 for male veterans. Thus, these two predictors of college success are better than either one alone.

Summary. In summary, then, different studies show different degrees of predictability for the ACE. These differences in predictability studies may result from: (1) differences in the groups in terms of motivation and aptitude; (2) differences in language and cultural backgrounds; and (3) differences in the type of subject matter in which the students major. While all studies show a positive relationship between ACE scores and college success, in none is the correlation between ACE scores and college success high enough to rule out the usefulness of other predictors of success such as rank in high school.

Procedure

The subjects used in this study were students who were admitted in September, 1953, and who completed at least one semester at Los Angeles City College. The grades of these students were recorded for as long as they remained in attendance up to Fall of 1955. The sample included all full-time day students who had not graduated from high school and an approximately equal number, selected at random, who had graduated from high school.

A pilot study had shown no significant difference between the two groups in grade point average, mean entrance examination scores, and the correlation between entrance examination score and grade point average. Therefore, in the present study the two groups were combined.

The group was divided into ten sub-groups according to the standard deviation scores received on the 1952 revision of the American Council on Education Psychological Examination for College Freshmen. Then the following data were recorded on IBM cards: Sex, Age (September, 1953), Nation of birth, High school attended, Previous college units earned, Total units attempted, Total units completed, Total grade points earned, Number of semesters attended, Number of units attempted each semester, Number of failures and incomplete grades, Number of repeated courses, Major sub-

ject as indicated by analysis of courses completed, Curriculum selected by student was classified as two-year semi-professional or four-year college, Requests for transcripts to upper division colleges and universities.

The information on the IBM cards was key-punched and most of the compilations were made with these cards by use of the IBM sorter.

Before eliminating those who had not completed a semester of work, and before eliminating foreign students, the sample numbered 312 students. The twenty-nine foreign students who were excluded from the final sample were eliminated because of the probability that the ACE score was an invalid index of their aptitude. The other fifty-one of the original sample dropped school during the first semester without completing any units and thus could not be used in the final sample. This left a total of 232 students who completed one or more semesters and did not have a foreign ethnic background. The total remaining group, divided into groups according to ACE scores, is shown in Table I.

TABLE I

Summary of Students According to Placement on ACE Entrance Examination

	ABILITY GROUPS										
Group	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Total**
ACE Percentile Rank	100-99	98-94	93-85	84-70	69-51	50-32	31-17	16-8	7-2	1-0	
Number completing one or more semesters	4	11	18	35	31	35	35	30	19	14	232
Percentage completing one or more semesters	100	92	90	100	86	81	85	79	58	67	84

Results

Grade point averages compared to ACE Examination Scores. The most common criterion of college success for a student is the average of his course grades. Grade point averages were calculated on a three-point scale with a unit of "A" equalling three grade points; a "B" two; and a "C" one. The grade point average for the whole group was 1.37. Table II shows the effectiveness of the ACE in predicting success according to this criterion. It shows that the highest four groups according to ACE scores achieved well above average grades; the lowest grade point average of these four groups was 1.7. Groups 5, 6, 7, and 8 were successful, i.e., a C or above

average. However, groups 7 and 8 failed to achieve an average equal to the mean grade for all groups. Groups 9 and 10 were unsuccessful, i.e., below a C average.

TABLE II

Grade Point Averages Compared to Score on ACE College Entrance Examination of People Completing More than 8 Units

Group	1	2	3	4	5	6	7	8	9	10	Total Group
Grade Point Average	2.28	2.17	1.84	1.73	1.31	1.39	1.12	1.21	.76	.60	1.37
Number	4	7	15	32	30	27	32	24	16	6	193
S.D.	.49	.56	.60	.62	.54	.50	.53	.42	.41	.30	.37
Standard Error of Mean	.28	.23	.16	.11	.10	.10	.10	.09	.11	.13	.03
Mean Number of Units Per Group	16.3	47.9	47.6	43.6	40.6	47.3	32.4	38.9	27.4	27.3	

Correlation between Grade Point Average and Scores on the ACE. The mean ACE raw score equalled 99.9; the standard deviation, 29.12. The correlation between ACE scores and grade point average was .58.

Since in previous studies correlations were higher between ACE scores and academic subject grades than non-academic subject grades, it appeared possible to derive a higher correlation by limiting the group to academic students. Therefore, from the total group the academic or liberal arts students were selected. This group comprised 97 four-year college preparatory students with the following majors: Social Science, Life Science, Psychology, Meteorology, Archeology, General, Earth and other Sciences, and Foreign Language. Despite an expectation suggested by previous studies of a higher correlation derived from groups of liberal arts students, the correlation of .47 between average grades and Entrance Examination scores was not as high for this group as for the total group.

"Incomplete" and "F" grades as the criterion of college success. Another indicator of a student's success would be the avoidance of "F" and "Incomplete" grades. A complete record of "F's" and "Incompletes" is reported in Table III. With the use of "Incomplete" and "F" grades as a criterion for failure, the highest ability group demonstrates unqualified success. In fact, there is only one "F" or "Incomplete" grade among the four students in the highest ability group, whereas students in the lowest ability group averaged more than three "F's" or "Incompletes" each. The 15 students

in groups 1 and 2 accumulated only four grades below "C" as compared with 176 unsatisfactory grades received by 33 students in groups 9 and 10. However, the groups scoring near and below the mean on the ACE Examination took more classes at Los Angeles City College than those scoring above the mean; this factor, therefore, created a much greater chance of receiving more poor grades for the lower than for the higher scoring group. An attempt was made to control this factor by correlating by means of the biserial technique the relationship between scores on the ACE Examination and grades of "C" and above. The biserial correlation coefficient equals .13. This correlation, while low, is significant at above the .01 level.

TABLE III

"Failure" and "Incomplete" Grades Received Within ACE Ability Groups

Group (ACE)	1	2	3	4	5	6	7	8	9	10
Ratio of "Failures" and "Incompletes" to Students	.25	.45	.35	.63	1.	1.	1.8	1.6	1.9	3.28
Number of "Failures" and "Incompletes"	1	5	7	22	31	35	63	48	37	46
Number of Students	4	11	18	35	31	35	35	30	19	14

TABLE IV

Number of Courses Repeated Within ACE Ability Groups

Group (ACE)	1	2	3	4	5	6	7	8	9	10
Number of Repeat Courses	0	0	3	6	7	5	8	8	9	4
Number of Students	4	11	18	35	31	38	38	30	19	14

Repeated courses. A repeated course also is an indication of an unsuccessful experience in college. People repeat courses ordinarily only when they have either failed or have received "D's" or "F's." Among the top ability groups not one person repeated a course. Groups 3 through 10 show varying numbers of repeated courses and, as Table IV indicates, there is a strong tendency for the number of repeated courses to increase as the ACE score drops.

Requests for transcripts. A request for a transcript to four-year colleges and universities could be used as another criterion of success. The use of such a criterion is justified by the supposition that anyone who is reality-oriented would request a transcript to another college only when he had been successful enough in the junior college to meet the four-year college requirement. The request for transcripts according to ability groups is shown in Table V. This table indicates that there is almost a direct relationship between scores on the ACE Examination and number of requests for transcripts.

TABLE V

Number of Transcript Requests to Four Year College for Each ACE Group

Group (ACE)	1	2	3	4	5	6	7	8	9	10
Number of Students Requesting Transfer	4	11	18	35	31	35	35	30	22	14
Percentage	100	83	50	49	55	28	31	22	13	6

TABLE VI

Proportion of Two and Four Year Majors Within ACE Ability Groups

Group (ACE)	1	2	3	4	5	6	7	8	9	10
Undetermined	24%	18%	0%	3%	3%	11%	9%	7%	0%	0%
4-Year Major	50%	73%	94%	77%	87%	69%	68%	63%	53%	43%
2-Year Major	25%	9%	6%	20%	10%	20%	23%	30%	47%	57%
Number of Students	4	11	18	35	31	35	35	30	19	14

Type of Major Selected. The type of major selected by the student can be used as another criterion of academic success. The successful student would be expected to find the academic type of course compatible with his ability and thus select, more frequently than the unsuccessful student, a four-year college curriculum. On the other hand, the student with less academic ability would be expected to select a two-year, non-academic, terminal junior college curriculum. Table VI confirms this expectation of

a relationship between ACE scores and type of major. It shows a decided tendency for the proportion of two-year terminal majors to increase as the ACE scores decrease.

Incidentally, despite this general tendency for low-scoring students to select non-academic curricula more frequently than high-scoring students, most students (67 per cent) planned a four-year college major.

Graduation. Graduation from college is an ultimate criterion of college success: those students who graduate might be considered successful; those who do not, unsuccessful. Table VII shows that with the exception of the students in the two highest groups, the groups with high ACE Examination scores graduated in much greater proportion than the groups with low scores. The explanation for the reversal of the two highest groups probably lies in the fact that the upper two ability groups transfer early to four-year colleges and thus graduate from another college, rather than from the junior college. Thus many of them undoubtedly graduate but not from the junior college where they initiated their college career. This fact probably explains why groups with the largest percentage of graduates from this junior college are in groups 3, 4, and 5 and not groups 1 and 2. Despite the relationship between high test scores and graduation, relatively poor performance on the ACE Examination is not a certain indication of failure; for even in the next to the lowest group one person graduated. This was a student who had pursued a home economics major which she had followed continuously since junior high school. However, not one person in the lowest group graduated. This fact further substantiates the conclusion that the extreme scores of the ACE Examination are more predictive than the middle scores.

TABLE VII

Students Who Graduated Within ACE Ability Groups

Group (ACE)	1	2	3	4	5	6	7	8	9	10	Total
Number of Students	0	1	4	9	7	6	6	5	1	0	39
Per cent of Students in Group	0%	9%	22%	23%	23%	17%	17%	17%	5%	0%	

Conclusions

On the basis of all criteria of college success investigated in this study, the American Council on Education Psychological Examination for College

Freshmen proved to be an effective predictor of college success.

1. Students who received high scores on the examination averaged higher grade point averages than those with low examination scores.

2. The correlation of examination scores with grade point average yielded a coefficient of .58. This coefficient means that grades may be predicted from the examination score 18 per cent above chance and that an extreme score on the examination is a very effective predictor of success or failure. An explanation of the lower correlation coefficient (.47) for the liberal arts students may be found in the fact that less heterogeneity in examination scores was found among this group than among the whole sample. This lower heterogeneity in test scores would mean that the liberal arts group was more uniform in ability than the whole group. Therefore, in the smaller, more homogeneous group other factors than differences in ability determined college grades.

3. The effectiveness of the examination, especially at the extremes, is further borne out by comparing examination scores with "F" and "Incomplete" grades. Only a fraction of the students with high scores received such grades. The groups with low scores averaged more than one "F" or "Incomplete" and the very lowest group averaged more than three "F's" or "Incompletes" per student.

4. The same tendency holds true in comparing examination scores with repeated grades. Students scoring in the upper extreme of the examination tended not to repeat courses, while students scoring lower on the examination tended more frequently to repeat courses.

5. As judged by the number of requests for transfers to four-year colleges and universities the examination is an effective predictor. Except in a few instances in the middle scores on the examination there was a decreasing proportion of students requesting transfers as the examination scores decreased.

6. In general, students receiving the lowest grade on the examination selected a two-year major more frequently than those receiving high scores. Therefore, again, the examination is useful for predicting academic success.

7. The examination is effective in predicting graduation. Controlling the transfer factor, the number of graduates was related to examination scores. The percentage of graduates fell to zero for the lowest group.

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The music committee of the California Association for Supervision and Curriculum Development, Southern Section, has announced a new handbook, *Music for Children With Special Needs*. The committee has incorporated new ideas and current references which make this publication particularly valuable for teachers of mentally retarded, cerebral palsied, deaf, or blind children. Copies may be obtained from Miss Frances Cole, 200 South Lexington Avenue, El Monte, California.

Sex Differences in Intelligence of Educable Mentally Retarded Children

CARMEN FINLEY AND JACK THOMPSON

Although individual intelligence tests are designed to keep sex differences at a minimum, sex differences for the Wechsler-Bellevue, Wechsler Intelligence Scale for Children and Stanford-Binet have been reported both in the standardization and other studies (1, 3, 4, 5, 6, 7). Seashore, Wesman and Doppelt (3) report three possibilities which logically could account for sex differences. These are, (1) that the tests and the scales are unbiased and one sex actually is superior in performance on the test, (2) that the sexes are equal in mental ability, but the chosen test items turned out to be slightly biased in favor of one sex, or (3) again assuming that general ability is not sex differentiated that the sampling of one of the sexes was somehow chosen on a slight bias.

In attempting to evaluate the results of an intelligence test, it would be of value to know whether sex differences actually do exist on the specific instrument being used. Whether the difference is due to the three possibilities postulated by Seashore and others (3) may not be answerable, but operationally if such differences do exist, they need to be taken into account in the intellectual assessment.

In reviewing the research literature, it appears that only one study pointed out possible sex differences on the WISC. Seashore and others (3) found differences in I.Q. at some of the age levels of the standardization group. No tests of significance were computed. The authors tested these differences and found significant differences at the 5 per cent level of confidence in favor of the boys at ages 12 and 15 for verbal I.Q. and at age 8 for full scale I.Q.

This paper is concerned with the study of sex differences for a specific homogeneous group, educable mentally retarded, on the WISC. Three hypotheses are formulated to test for possible sex differences.

Carmen Finley is Director of Research and Publications for the Sonoma County Schools, a position she has held for seven years. Before coming to this post, she was a mathematics teacher at Porterville Union High School for three years. Miss Finley obtained her master of arts degree in 1952 from Teachers College, Columbia University, and is currently taking additional work at that institution while on leave from Sonoma County Schools.

Jack Thompson is Director of Guidance for the Sonoma County Schools. Formerly a teacher and school psychologist, Mr. Thompson obtained his master of arts degree in psychology from San Jose State College in 1950.

An abstract of the above article was presented at the March 1959 meeting of the California Educational Research Association.

1. There is no sex difference in the intelligence of educable mentally retarded boys and girls on full scale I.Q.

2. There is no sex difference in the intelligence of educable mentally retarded boys and girls on verbal scale I.Q.

3. There is no sex difference in the intelligence of educable mentally retarded boys and girls on performance scale I.Q.

Subjects

Three hundred and fifty-three WISC protocols of educable mentally retarded children comprised the data for this study. The subjects were selected according to the following criteria:

1. The subject must have been determined eligible for placement in a special education class for the mentally retarded as defined by the California Education Code, Section 9801.1 (2).

2. The chronological age of the subject at the time of test administration was not less than 8-0 or more than 13-6. The lower limit was chosen because Coding B is administered only to subjects of 8 years and beyond, whereas younger children are administered Coding A. The upper limit was arbitrarily chosen because in the setting in which the authors work this is the upper age limit for children placed in special classes at the elementary school level.

3. Full scale I.Q. of the subject was between 50 and 80. These limits were chosen because this is the usual range of intelligence for children to be considered as possible special class candidates in this county. In terms of WISC classification, this includes the borderline and mentally defective intelligence groups.

4. The subject had been given all the ten usual sub-tests; that is, information, comprehension, arithmetic, similarities, vocabulary, picture completion, picture arrangement, block design, object assembly and Coding B.

Table I shows the means and standard deviations of the chronological age of boys and girls and test of significance. As indicated in Table I, there was no significant difference in the ages of the boys and girls.

The means and standard deviations for boys and girls were obtained for verbal scale I.Q., performance scale I.Q. and full scale I.Q. Then "t" test was used to determine the degree of significance, if any, between boys and girls in each of these three areas.

Table II gives the means, standard deviations and "t" values between boys and girls for verbal scale I.Q., performance scale I.Q., and full scale I.Q.

TABLE I

Chronological Age (in Years) of 200 Boys and 153 Girls Included in Sample

	N	*Mean Age*	*S.D.*	*Critical Ratio*
Boys	200	10.86	1.49	.386
Girls	153	10.93	1.40	

As indicated in Table II, the largest critical ratio was found on verbal I.Q., which narrowly misses the required reference point of 1.97 to be significant at the 5 per cent level of confidence. On performance scale I.Q. there was not a statistically significant difference between boys and girls with only a slight difference in the means. While on full scale I.Q. there was not a statistically significant difference between boys and girls, the difference approached significance and was between the 5 per cent and 10 per cent level of confidence in favor of the boys.

TABLE II

Summary of Statistics and Significance of Sex Differences in Sample of 200 Boys and 153 Girls

	Boys		*Girls*		*Critical*	*Significance*
	Mean	*S.D.*	*Mean*	*S.D.*	*Ratio*	*Level*
Verbal I.Q.	70.68	6.88	69.19	7.32	1.96	Not
Performance I.Q.	72.65	8.65	72.07	9.27	.605	Not
Full Scale I.Q.	68.80	6.89	67.49	7.11	1.75	Not

Discussion

The results of the present study are not inconsistent with the findings of Seashore and others (3) that when sex differences exist on the WISC, they are in favor of the boys. However, these differences are not consistent enough to warrant any generalizations regarding sex differences. For the population used in this study statistical significance on verbal scale I.Q. and full scale I.Q. was approached. The reasons for this may be due to the three possibilities outlined by Seashore and others (3), although there appears to be no answer at this time.

In terms of the previously stated hypotheses, none of them may be statistically rejected.

Summary

WISC protocols of 153 girls and 200 boys were studied in order to determine the extent of sex differences with educable mentally retarded children. Means and standard deviations were computed for verbal scale I.Q., performance scale I.Q., and full scale I.Q. None of the differences were statistically significant although the difference on verbal scale I.Q. approached significance in favor of boys.

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Educational Research, a Journal of the National Foundation for Educational Research in England and Wales, includes information on educational research for teachers. The February issue (1959) is a down-to-earth publication dealing with such topics as the effects of class size on teaching, differences between education in town and country, how children understand numbers, and methods of teaching reading. The November issue deals with intelligence testing and the wish to learn. The Foundation plans to continue this same general type of publication dealing with such items as the teaching of modern languages, research in technical education, the gifted child, and testing attainment and children's vocabulary.

Lillie Bowman Retires

Lillie Lewin Bowman's retirement this July from her position with the San Francisco Unified School District has lost the California Advisory Council on Educational Research the services of one of its remaining charter members. Director of San Francisco's Bureau of Research since 1946, Dr. Bowman was one of the twelve research specialists who comprised the statewide council at its inception in 1949. Her experience and talents—and above all, she herself—will be sorely missed by the Council in the years ahead.

Dr. Bowman's career in the San Francisco system began in 1924 when she was the first psychologist hired by the district. From 1925 to 1939 she served as Assistant in the Bureau of Research and from 1939 to 1946 held the position of Supervisor in that department.

Although Dr. Bowman's contributions to education are countless, a listing of the highlights of her career should include her administration of the first city-wide evaluation program in San Francisco. Also, in 1945 the Superintendent of Schools, Dr. Curtis E. Warren, credited her with setting a pattern for the State in the procedure for recording emergency attendance. In the same year Dr. Bowman devised a plan for recording pupils absent for illness which netted her district thousands of dollars.

Dr. Bowman and her husband have immediate plans for extensive world travel accompanied by a portable typewriter. It is the hope of the Council that Dr. Bowman will not sever completely her connections with the *CJER*, with which she has worked closely as editorial board member, guest editor, and frequent contributor.

Dr. Bowman obtained her Ph. D. degree in 1937 from the University of California, Berkeley, from which institution she had previously received both her A.B. and M.A. degrees. She also completed a year of graduate study at Teachers College, Columbia University.

Besides being a certified psychologist, Dr. Bowman holds California life credentials for elementary and junior high, general secondary, general administration, research and guidance, and school psychologist. She currently holds membership in American Psychological Association, California State Psychological Association, California Association of School Psychologists and Psychometrists, American Association of School Administrators, National Education Association, California Teachers Association, San Francisco Teachers Association, American Educational Research Association, California Educational Research Association, and Pi Lambda Theta.

Children's Concepts of Psychologists And Psychiatrists

STANLEY M. GOERTZEN

This study is an attempt to identify the concepts of and feelings toward psychologists and psychiatrists held by children. A group of (1) open-ended statements and (2) direct questions related to psychologists and psychiatrists was presented to children in the third, fifth, seventh, and ninth grades attending public school. The children were asked to complete the statements and answer the questions in an attempt to find the job concept of and feelings toward both professional groups. The teachers involved were conferred with individually to familiarize them with the technique. Children could be helped in reading the statements and in writing their comments, with the reservation that coaching could not be given. None of the classes in the sample had formally discussed psychologists or psychiatrists previous to the testing.

The sample included urban and suburban classes and relatively high and lower-middle socio-economic groups. The sample, however, included the full socio-economic range and is felt to be fairly representative of the San Francisco Bay Area. There were at least 86 children at each of the four grade levels and a total of 358 children.

Several methods for judging the answers were pre-tested. The method finally employed was an evaluation employing a five-point scale ranging from "no concept" to "a good concept" and from "strong negative" feelings to "strong positive" feelings. Judging was done by two psychologists and good agreement was found.

The responses were separated into three classifications for ease in reporting: (1) poor or misconcept, (2) fair or good concept, and (3) no identifiable concept. The measure of a concept was admittedly coarse, since this is exploratory research. As long as the concepts of "studying the mind" or "helping the mentally ill" were present, credit was given.

Representative responses from all grades are given in Table I.

Stanley M. Goertzen is a psychologist with the San Francisco Unified School District. He previously held the same position in the Alameda County Schools for four and a half years, and has taught in Palo Alto and Portland, Oregon, schools. Dr. Goertzen obtained his Ed.D. in educational psychology from the University of Oregon in 1955, before which time he had obtained degrees in educational counseling and psychology from Oregon State College and Lewis and Clark College.

TABLE I

Representative Responses

Grade		Misconcepts	Concepts
3	Psychologist	Studies rocks and diseases; studies geography; gives shots; a college student; goes to school.	A brain doctor; treats sick brains; when you go to him with a problem he answers it.
	Psychiatrist	Sketches; studies insects; a business man.	Tells if you're nuts or not; helping other people in the mind; tells you what to do if you or someone else is crazy; a man like a doctor who tries to help people with their troubles; a man who treats sick brains.
5	Psychologist	A chiropractor; a scientist; teaches about stars; studies rocks; helps sick animals; invents; makes medicine; finds ways to fight disease.	Understands people; helps study the brain to develop new studies; they test; help raise a child right; a mental man; helps people mentally off balance; helps mentally ill people; teaches psychology; helps real nervous people; his job is to see a child's way of thinking; studies people's minds; help you not worry any more.
	Psychiatrist	Looks into the future; keeps people from going blind; a college nurse; a doctor who works on eyes.	Cures crazy people; helps people see things more clearly so they won't have spells; helps people who are not in their right mind; a doctor for people with sick minds; checks your brain to see if the screws are working; to make people who go mad stop going mad; to untrouble the mentally troubled.
7	Psychologist	Studies bones; they know a lot; studies oil and rocks; operates on cats and dogs; studies plants and animals; hunts for oil; studies stars and the moon; stuffs animals.	He can work out the problems of people; improves ways of children; studies the way people think; helps parents with children; gives ink blot tests; helps people who go out of their minds; helps you understand yourself; knows a lot about people and be a people-loving person; gives IQ and ability tests.
	Psychiatrist	Helps people with sore muscles; fixes teeth that don't come in straight; operates on people; studies old time Egyptians; trains muscles to do a better job.	Helps people who do odd things; refreshes your memory; when you are nervous and don't know what is going on you go to him; helps you get rid of things you're afraid of and tells you what to do; a doctor of mental illness; helps people who are mentally or mindly wrong; adjusts people; traces back in their life to see what they need; treats people kindly never harsh; find out your past life and help you; gets people from thinking they see and hear things.
9	Psychologist	Studies science; studies the animal kingdom; something to do with science; he explores things.	Psychs things out; helps people with nervous breakdowns; studies habits of people; tries to relieve nervousness; sees if you're o.k. in the head; to help with the troubles of a person who is bothered; help people so they can get along better in life.
	Psychiatrist	A man of science; studies rock formations.	Helps you when you think you are going out of your mind; gets your life story and straightens out your thoughts; helps the mentally disordered and the emotionally upset; corrects the mentally ill mind; makes you lie down on a couch, close your eyes and start talking; gives the patient peace of mind; to help people solve problems and to find deep down what's wrong with them; he analyzes the emotional disturbances which are worrying and all complexes.

Growth Pattern of Concepts

A consistent growth pattern in defining these professions may be seen; the higher the socio-economic group, the more correct the concept. This was true at all levels. The higher socio-economic group (largely suburban) presented good concepts three times as often as the lower group of suburban children and rural children. The urban group was only slightly better than the suburban group. Greater knowledge of the psychiatrist than of the psychologist is a consistent pattern, as can be seen in Table II.

TABLE II

Per Cent of Children at Each Grade Level Holding "good," "poor," and "no concept" of Psychologists and Psychiatrists

Mean Age	*Grade*		*Good concept*	*Poor concept*	*No concept*
8-10	3	Psychologist	14%	41%	45%
		Psychiatrist	22	39	39
10-10	5	Psychologist	30	34	36
		Psychiatrist	52	16	32
12-11	7	Psychologist	35	38	27
		Psychiatrist	63	19	18
15-0	9	Psychologist	39	28	33
		Psychiatrist	71	11	18

It is obvious from Table II that when we are introduced to children as psychologists or psychiatrists we must explain our work and our intent, unless we relish the risk of being thought of as "students of insects" or "college nurses."

The feelings toward these professions were positive to a large degree. Approximately a fourth of the total responses could not be classified as either positive or negative. Two negative responses at the fifth and seventh grade levels and a few at the ninth grade might be described as mocking or derisive. The negative responses included such statements as "They talk too much," "asks too many questions," and "talks of nasty things." These, however, comprise only 2 per cent of the total number of responses. On the positive side, the children talked of the helpfulness of these people. They mentioned "kindness," "acts nice and courteous," "is a people-loving person." Most of the 69 per cent positives mentioned that "they helped people." Psychologists and psychiatrists were viewed similarly in this respect.

Of some interest was the "couch doctor" stereotype found in stock jokes of psychiatrists. This concept was not mentioned until the fifth grade, and then by only 5 per cent of the respondents. At the seventh grade it was mentioned by 9 per cent and by 17 per cent at the ninth grade. Most of the children apparently have faith in and positive feelings toward psychologists and psychiatrists and they are not completely mystified. As one third grade girl wrote, "A psychiatrist's job is . . . if a person has something wrong with their brain they go to a psychiatrist like someone I knew once who was born without a very good brain. Her mistress could not leave her alone very long because she would tear up the house . . . the psychiatrist said he could do nothing about it." The children did not distinguish between the two professions nor were they asked to. Eight children attempted this but only three were successful.

The following listing includes concepts which have been of particular interest to colleagues in the profession. Among them may be noted misconceptions and fallacies frequently voiced by the general public as well.

1. *(Psychologists) "They use psychology on people . . . like when you want a child to eat you would say 'after eating we will have a piece of candy.'"*

   "A psychologist is a person who tries to have someone else do what they say without force. As if I said, 'Please mow the lawn,' to someone and they said, 'No.' I would then, if I were a psychologist, make them think it was fun or something similar so they would do it."

   "Psychologists always seem to make people do something that they didn't want to do and finally ends up making them like it."

   "Psychologists are dignified men who really impress people. They read a lot and like to talk to people. He finds them interesting. He is a well-dressed man and very well-mannered."

2. *(Psychiatrists) "A person who fixes up any stiffness in your body. A mental psychiatrist deals with the mind."*

   "Psychiatrists make people lie down on a couch. He has a pad and pencil. He is a young man but looks older because his patients' problems sometimes drive him 'batty'."

   "Psychiatrists always say when you walk in the office . . . 'Lie down on the sofa and going back to when you were a little boy or girl.' And you would say, 'Well, I was born in a house in New Mexico.' That is what it would be like."

3. *(Psychologists) "A psychologist helps a psychiatrist along the way."*

   "A psychologist is a man who teaches the reactions of the human mind. He teaches the psychiatrists to understand the human mind."

   "I think a psychologist's job is to know a lot about people and problems and be a people-loving person."

Summary

In this exploratory research it was found that, in elementary school classes where there has been no special, relevant discussion, a large number

of children hold poor concepts of the psychologist and psychiatrist. Even in the ninth grade, only a third of the students had a clear idea of the psychologist's job. The psychiatrist is adequately known at this level by 70 per cent of the students. The misconcepts of these positions are frequent through the grades, ranging from 41 per cent in the third grade to 10 per cent in the ninth grade. This suggests a large uninformed group and implies an educational need, in view of the prominence of the psychologist's role in public schools.

In the eight-months' period following the original research, two teachers at the fifth and seventh grade levels and one at the third and ninth agreed to teach a unit on the various professions, including the psychologists and psychiatrists as a major part of the unit. The original spark of interest came from the opinionnaire employed in the original study. Six months after these study units were completed the same opinionnaire was used and it was found that less confusion was present and that esteem and even a kind of reverence had supplanted the "I don't know's" to a large degree. While the comments in the original study were not negative, they were far more neutral than those of these "educated" groups. Children who had "no idea" were reduced to 5 per cent in the fifth grade, whereas they earlier comprised a third of the group. Good concepts were increased to 76 per cent for the psychologists from the earlier 30 per cent; the comparable figures for psychiatrists were 89 per cent over an earlier 52 per cent.

Many complete and rather well-thought-out responses were received on the follow-up. Some definitions which contained very good concepts for the age levels represented were given by children whose original papers had been classified as "no concept" ("I don't know") responses in the original study. Some examples of these follow:

Third Grade: *"A psychologist is a man you go to when you have mental troubles. He helps you think about it." "A psychiatrist is someone who is sort of a doctor. He takes care of people who can't think right. He's a man who treats sick brains."*

Fifth Grade: *"A psychologist's job is to try to help people break habits of their children or to help them break habits they are doing. He is a person who does things for people who have problems about their children or about them and try to help as a friend." "A psychiatrist's job is to find out why the person he's treating is jumpy, nervous, can't sleep at nights and who is crabby. He's a person who helps people who are mentally ill. He looks into the past of the person he or her are treating."*

Seventh Grade: *"A psychologist is a person who studies people's lives and tries to help them. People ask him questions and he tries to help and answer. He tries always to do what he thinks is right so that he may not hurt the person in any way. He helps the mentally ill, or upset, by talking to them. He also gives I.Q. tests and ability tests. Studies people's lives to try to find out and make different things that will help other people live better." "A psychiatrist is a person people come to when they think something is mentally wrong with themselves. He studies them very hard and ask him questions and he tries to help and answer the questions. He helps the person in any personal way he can. He hears about his home life and about his job and anything else that may help him find his trouble."*

Relationships Between Two Types Of Verbal Ability

ROBERT AMES

This study was an attempt to determine whether there is a relationship between verbal ability, as measured by "written" performance on a standardized objective test, and verbal ability as measured by oral participation in leaderless group discussions.

Teacher training institutions and school systems are continually concerned with the problem of formulating selective devices for prospective teachers. Although adequate criteria have not yet been established, the ability to communicate effectively with his peers is generally considered to be a desirable characteristic of a teacher.

The leaderless group discussion (LGD) technique has achieved considerable respectability in recent years as a form of situational test of verbal ability and leadership. Ansbacher (2), Bass (3,4,5) and Eichler (6) have each contributed extensively to the development of LGD as a psychological testing instrument. The present author has reported on performance in LGD and experience in group leadership (1). The present study is concerned with whether there may be some underlying abilities which contribute to the successful performance of participants in group discussions.

Data and Procedure

The 96 students enrolled in three sections of an educational psychology course at Los Angeles State College were divided into 16 groups of six members each. Each group was observed by the remaining members of the class during a thirty-minute discussion for which there was no appointed leader. The number of observers varied from 20 to 25. Each member of each group was ranked independently by each observer on the basis of his over-all performance, using the following criteria:

Ability to: 1. Initiate action towards a goal.

2. "Draw out" other members of the group.

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3. Express opinions without antagonizing others.
4. Assume leadership without monopolizing.
5. Support a point of view from available evidence.
6. Display knowledge of a topic articulately.
7. Recognize the value of another point of view.
8. Keep the group to the point of the discussion.
9. Summarize.

The ranks obtained for each participant were then combined. The two participants ranking highest in each group, the two ranking in the middle of each group, and the two ranking lowest in each group were then assigned classifications of High LGD, Middle LGD, and Low LGD, respectively, leaving 32 participants in each of the three classifications.

The topics discussed were related to the areas of psychology and education. Some were rather broad and general, such as, "Should we teach religion in the public schools?" Others were more specific situational problems relating to materials from the text or lectures.

Percentile scores (national norms) on the L-Scale of the School and College Aptitude Test (SCAT) were obtained for each of the 96 subjects. The percentiles for the entire sample ranged from 2 to 99, with a mean of 61.25 and a standard deviation of 28.3.

The ranks assigned to the participants by observers during LGD were considered to be indices of "oral" verbal ability. The percentile scores obtained on the SCAT were considered to be indices of "written" verbal ability.

Results

Reference to Table I indicates that the trends in these data are apparent upon inspection. In terms of the t-ratios secured, the differences between the mean percentile ranks obtained on the L-Scale of the SCAT are statistically significant for all groups. The difference between high and low performers in leaderless group discussions is significant beyond the .001 level. A biserial correlation of the percentile scores obtained by the High LGD and Low LGD subjects yielded an index of .70, with a standard error of .13.

Discussion

The results suggest that there may be some underlying, measurable abilities which contribute to the successful performance of participants in group discussions. Performance on the L-Scale of the SCAT is evidently highly related to oral performance in face-to-face group situations.

It is noteworthy that, among the 32 subjects classified as High LGD, only six obtained percentiles lower than the mean of the entire sample. Of these six, only three obtained percentiles lower than 50. Among the 32 subjects classified as Low LGD, however, nine obtained percentiles higher than the mean of the entire sample. These findings would appear to indicate that a high degree of "written" verbal ability is not necessarily predictive of success in oral performance, but that a low degree of "written" verbal ability is quite highly predictive of failure in oral performance.

TABLE I

Comparison of Means of Percentile Ranks on the L-Scale of the SCAT for Three Classifications of LGD Participants

Classification	*Number*	*Mean*	*S.D.*	*S.E. diff.*	*t*
High LGD	32	77.59	17.7		
				5.40[a]	3.18**
Middle LGD	32	60.38	24.5	5.87[b]	5.41***
				6.61[c]	2.21*
Low LGD	32	45.78	27.5		
Total	96	61.25	28.3		

[a] S.E. of difference between means of High LGD and Middle LGD
[b] S.E. of difference between means of High LGD and Low LGD
[c] S.E. of difference between means of Middle LGD and Low LGD
*Significant beyond the .05 level
**Significant beyond the .01 level
***Significant beyond the .001 level

Several factors limit the general applicability of this study. Assignment of subjects to groups was arbitrary. Other experiments should include randomized assignments and stratified assignments. The effects of the nature of the discussion topics are not known and should be studied. The test-retest reliability of the rankings assigned by multiple observers is not yet known, but will be the topic of another report using these same subjects. Whether scores obtained on the L-Scale of the SCAT represent "written" verbal ability is perhaps open to debate. Other studies should include compositions as criteria. A follow-up study of these same subjects should be made in terms of teaching success. The subjects used varied in age from 20 to 50, and in academic status from junior to graduate student. No significant differences were found to suggest that these factors influenced the results, however. Finally, it is not known whether students in other institutions would produce similar results.

The implications of the findings of this study for teacher-training institutions are obvious. If the ability to communicate effectively with his peers

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A Study of Selected Psychometric Characteristics of Home Economics and Non-Home Economics Women at the University of California, Los Angeles

FRANCES OBST

This study in educational psychology attempted to obtain experimental evidence as to whether home economics women at UCLA are, as a group, differentiated from women students in general on this campus, as measured by certain standardized instruments; to see whether these differentiations can be positively and significantly identified with respect to selected traits; and to make recommendations on the basis of the findings for improving the advising and counseling of students within the home economics major.

Socio-economic status, personality factors, abilities and interests were measured among the subject home economics women and a group of randomly selected non-home economics women. The instruments used were: (1) the American Council on Education Psychological Examinations (A.C.E.); (2) the Strong Vocational Interest Blank for Women; and (3) the California Psychological Inventory (C.P.I.).

Certain pertinent aspects of the current situation in home economics in colleges and universities in the United States; how many students were enrolled; what home economics curricula and courses students take; what in general are their needs and problems; and what placements they secure are delineated as background for the study.

A search of the literature revealed few studies related to or bearing upon the problem of differentiation. These few dealt with differentiation of interest patterns among home economics majors within the field itself and with analysis of factors influencing vocational choice.

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Socio-economic status was studied according to the major occupational groupings of parents from the United States Employment Service *Dictionary of Occupational Titles.*

The enrollment of women in the colleges at the University of California, Los Angeles, for 1954 was approximately 45 in Nursing, 1,242 in Applied Arts, and 2,435 in Letters and Science. The non-home economics women asked to participate in this study were chosen from each of these colleges. The sample was secured from the women's registration list. Every tenth card was drawn for a random selection. The sample included 145 home economics and 125 non-home economics women.

The hypothesis of this study was that there are no statistically significant differences between home economics and randomly selected non-home economics women at the University of California, Los Angeles, on selected psychometric characteristics as measured by standardized tests.

Assuming that the scores for the study are normally distributed, the computations for description of central tendency in distributive measures were: range, means, standard deviation. It became necessary to determine whether or not the two samples were drawn from the same population with respect to the 25 psychometric characteristics. An analysis of variance was performed to determine whether the differences between groups was that much greater than the variability within groups to warrant assertion that the groups were drawn from different populations. The "t" test was used to determine whether the differences between the groups were due to chance or due to differences in the sample populations.

For this study the 1% level was chosen as the confidence level to which significance was designated. This means that the probability was only 1 in 100 that chance occurred in the sampling. The 5% level means that 1 in 20 chances occurred in the sampling; this is too lenient. Nevertheless, the 5% levels were pointed out.

Table I gives the variance ratio of home economics and non-home economics majors on socio-economic status, the A.C.E., Strong Vocational Interest Blank, and C.P.I. F is the variance ratio observed and t is the probability of occurrence by chance as indicated by the observed F.

From Table I it may be observed that there was a highly significant F ratio on the A.C.E. linguistic scores at the .1% level, thus justifying a rejection of the null hypothesis that there was no significant difference in the variance of the two samples on the A.C.E. For the Strong Vocational Interest Blank for Women on the four scales—buyer, housewife, teacher, and dietitian—significance at the .1% level of significance on the housewife, teacher, and dietitian scales indicate differences in the two populations.

We may ascribe the following levels of confidence to P:

.0500 - .0100 P = 5% level of confidence
.0100 - .0010 P = 1% level of confidence
.0010 - .000 P = .1% level of confidence

TABLE I

Ratio of Variances: F. Between Groups and Within Groups on Socio-Economic Status, American Council on Education Psychological Examination, Strong Vocational Interest Blank for Women, and California Psychological Examination

Test or Data	*Mean Square Variance between Groups Estimate*	*Mean Square Variance within Groups Estimate*	*F.*	*P.*
Socio-Economic Status	13.313	3.808	3.496	
	1085.072	1052.991	1.030	
A.C.E.				
Quantitative	3.549	91.679	.039	
Linguistic	4648.971	228.007	20.390	.001
Total	5471.271	475.130	11.515	.001
Strong Interest Blank				
Buyer	350.320	115.537	3.032	
Housewife	3257.731	67.208	48.472	.001
Teacher	15592.440	155.645	100.180	.001
Dietitian	11145.962	114.936	96.975	.001
California Psychological Inventory				
Social Responsibility	9.700	13.058	.743	
Tolerance	13.117	14.039	.934	
Flexibility	11.973	12.859	.931	
Status	19.273	13.267	1.453	
Dominance	9.846	33.896	.290	
Social Participation	14.361	21.684	.662	
Femininity	9.145	9.560	.957	
Delinquency	70.964	18.322	3.873	.05
Intellectual Efficiency	14.564	18.443	.790	
Academic Achievement	18.813	15.568	1.208	
Honor Point Ratio	13.508	12.673	1.065	
Psychological Interests	0.526	7.654	.069	
Social Presence	2.171	30.204	.072	
Impulsivity	188.132	47.376	3.971	.05
Self-acceptance	24.811	13.405	1.851	
Infrequency	29.339	6.206	4.728	.05
Good Impression	8.106	44.324	.183	
Dissimulation	68.183	20.128	3.387	

Table II shows the differences between the means of the two samples, home economics and non-home economics majors, and t on all four measures. They are significant at the 5% level. It will be seen that the difference between the mean scores and the quantitative, linguistic, and total scores on the A.C.E. was significant at the .1% level of confidence. On the Strong Vocational Interest Blank the difference is significant at a .1% level of confidence for the housewife, teacher, and dietitian scales and at a 5% level of confidence for the buyer scale. On the C.P.I. the difference is

significant at a 5% level of confidence on the status, delinquency, intellectual efficiency, impulsivity, self-acceptance, infrequency, and dissimulation scales.

TABLE II

Differences Between the Means of Samples and t on Socio-Economic Status, American Council on Education Psychological Examination, Strong Vocational Interest Blank for Women and California Psychological Inventory

Test or Data	*Difference between Sample Means*	*Standard Error of Difference between Means*	$\frac{\sigma}{x}$	*P*
Socio-Economic Status	0.446	.239	1.87	.05
	4.118	3.962	1.04	
A.C.E.				
Quantitative	0.849	1.169	.73	
Linguistic	10.224	1.843	5.55	.001
Total	9.272	2.661	3.48	.001
Strong Interest Blank				
Buyer	2.338	1.313	1.78	.05
Housewife	7.004	1.001	7.00	.001
Teacher	15.260	1.523	10.02	.001
Dietitian	12.907	1.309	9.86	.001
California Psychological Inventory				
Social Responsibility	0.458	.442	1.04	
Tolerance	0.089	.459	.19	
Flexibility	0.466	.438	1.06	
Status	0.663	.445	1.49	.05
Dominance	0.339	.711	.48	
Social Participation	0.077	.570	.14	
Femininity	0.154	.378	.41	
Delinquency	1.058	.523	2.02	.05
Intellectual Efficiency	0.866	.524	1.65	.05
Academic Achievement	0.043	.484	.09	
Honor Point Ratio	0.598	.435	1.37	
Psychological Interests	0.214	.338	.66	
Social Presence	0.691	.671	1.03	
Impulsivity	1.702	.840	2.03	.05
Self-acceptance	0.722	.447	1.62	.05
Infrequency	0.663	.305	2.17	.05
Good Impression	0.124	.813	.15	
Dissimulation	1.013	.548	1.85	.05

When the F test was applied to the sample for both groups, a difference between groups on the Strong Interest Blank showed at the 1% level on the housewife, teacher and dietitian scales and at the 5% level on the buyer scale. On the A.C.E. there was a difference significant at the .1%

level on the linguistic and on the total scores. On the C.P.I. the difference is significant at the 5% level of confidence on the status, intellectual efficiency, delinquency, impulsivity, self-acceptance, infrequency, and dissimulation scales.

Since the 1% level of confidence had been selected at the level to which statistical significance would be designated, and applying it to the statistical treatment in the study, it may be said that the null hypothesis may be rejected at the 1% level for the A.C.E. and for certain items on the Strong Vocational Interest Blank for Women. For the C.P.I., however, this hypothesis may be rejected only at the 5% level of confidence as there were significant differences at that level.

Considering the differences first, the question arises as to which is the direction and which is the meaning.

The differences of the higher scores for home economics women on the Strong Vocational Interest Blank for housewife, teacher, dietitian at the 1% level of confidence and at the 5% level for buyers, might seem to indicate that more highly specialized patterns of interests may have led girls in the sample to the major within the home economics field. One might reason that women whose interests are in homemaking would choose that field of home economics as preparation for homemaking.

An analysis of variance ratio shows there is a statistically significant difference between the two groups on the socio-economic status as indicated by this measure at the 5% level.

A study of the findings leads one to reject the general hypothesis used for the A.C.E. and for the Strong Vocational Interest Blank. There were statistical differences at the 1% level of confidence between the home economics women and the non-home economics women on certain scales of the Strong Vocational Interest Blank and the A.C.E. Therefore, the hypothesis may be rejected for these two instruments. Because of these two scales, it would seem that these populations are different, in part at least, judging from the sample used. There was a difference significant at the 5% level on seven scales of the C.P.I.

The findings in this study give confidence that, on the basis of the tests used, certain patterns and discriminations can be made. The data derived from the measures show that the two selected populations differ significantly on the three factors of personality, interest and ability. This study, therefore, may serve as a first step toward later more refined differentiation of patterns among college women in home economics from college women in general.

On the basis of these results, it is recommended: (1) that the Home Economics Department continue to employ diagnostic tests with entering students in the expectation of securing more complete data as a basis for selection; (2) that the Department initiate further research with other

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Counseling Negro Pupils: An Educational Dilemma

WALDO B. PHILLIPS

The Negro occupies a prominent statistical position in the Los Angeles public school system from the point of view of enrollment, while the number of Negroes employed in the pupil personnel division is not large enough to register statistically.

Since the introduction of pupil personnel services it has been found that a large number of Negro pupils are in the need of these services. The follow-up studies reveal that the counseling services are not beneficial for the Negroes receiving these services, since they constantly reappear at the counselor's office.[1]

In a local high school where these studies were made the student body is 99 per cent Negro and the personnel less than 4 per cent Negro.[2] The white counselors had been successful in the white schools where they practiced their profession, and quite unsuccessful in the Negro schools. With this information this hypothesis was formulated: **Can white counselors attain positive results in counseling Negro pupils?** The experiment gained support from Harvey St. Clair's work.[3] The standard text books and journals in education did not have research materials on the subject.

Subjects and Method

The counselors were candidates for doctoral degrees who had had three years' counseling and two years' teaching experience. The non-directive

[1]Los Angeles Board of Education annual report, 1957.

[2]Personnel statistics, Los Angeles public school report, 1957.

[3]St. Clair, Harvey. "Psychiatric Interview Experiences with Negroes," *American Journal of Psychiatry*, No. 108, 1951.

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method of counseling was to be used in all of the sessions. Interviews were to be conducted once a week and up to forty minutes if needed.

The subjects were twelve 17-year-old boys who had repeatedly been referred to personnel for noise, tardiness, uncooperative attitudes in all social and educational avenues, and failure to utilize their assets or abilities in school work or to formulate vocational or professional plans for adulthood. They would not participate in non-required extra-curricular activities.

The boys came from middle class homes. Their parents participated in all school activities and attended all PTA meetings and encouraged and cooperated with the school in its attempts to sophisticate the boys.

The boys had been tested[4] and found able to do 12th grade work. They had maintained passing grades in all classes without effort or study.

Six boys were assigned to the white counselors and six to the Negro counselors. At the end of the semester there were follow-up studies and comparison was made of the results and of the counseling experiences of the sessions.

White Counselors' Results

The deceptive and defensive techniques used by the pupils throughout the interviews were effective. They did not allow the counselors to penetrate their social barriers to find the causes of their behavior. The pupils' ability to misdirect and counter-reflect responses and meanings, and their excessive use of gestures and unrelated verbal responses completely lost the counselors.

The counselors found reversed expressions of racial hostility apparent in all of the interviews. Many times the question from the pupils was: "Is it really worth my time and effort?"

The problem of establishing a rapport was difficult due to the submissiveness and suspiciousness which was displayed by the Negro pupils. From the initial interview the pupils readily developed insight and promised to become as the school wished them to become. The pupils realized their past experiences revealed many disorganized patterns and they promised readily to correct them, and continued counseling was not necessary.

The suspiciousness was apparent in many forms: the pupils were at times hostile, reserved, or "cool" as they expressed their behavior. At various points in the interviews the pupils questioned the counselor's position in the school and his authority.

The counselors were amazed at the social and economic aspirations of the pupils, such as, becoming doctors, lawyers, and attaining other socially

[4]The testing was done by the Testing Bureau of the pupil personnel division of the district.

recognized positions. When it was revealed that the test did not show positive predictability in those directions, the pupils showed more emotions toward them.[5] One counselor noted the professions where there were a large number of Negroes employed and directed these pupils to them.

The counselors were unable to establish a true rapport or neutralize the counseling atmosphere at any given point during the series of interviews. The follow-up studies of these boys showed they continued their former behavior pattern. They did not formulate any definite future vocational plans, and their attitude towards school and extra-curricular activities was the same. Their class grades were still above passing, but their effortless attitude was still present.

The parents did not notice any marked change in the students' behavior. The teachers' reports showed they were still the trouble spots in the class and in other school activities.

Negro Counselors' Results

The Negro counselors did not find it difficult to neutralize the counseling atmosphere during the sessions. They found the pupils relaxed and willing to discuss the home/school situation and other factors which caused their behavior.[6]

The social-racial barrier did not appear in any of the sessions. The subjects expressed their present problems—the small pressures placed upon them by the principal and teachers—in relation to their future fears concerning their limited roles in society.

They could not understand their parents forcing them to study and prepare for college and life while realizing the marginal position their children must assume. They could not understand the white teachers forcing them to develop when later these same teachers might hamper them.[7]

The Negro counselors found it fairly easy to establish the needed rapport with the pupils. The follow-up studies showed that these pupils experienced a marked change in attitudes and practices. They were never referred to the personnel. The parents and teachers noted and commented on the new approach the pupils had assumed. During the following semester the pupils did not need continued personnel services.

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[5]The counselors were aware of the sociological prestige drives which are present in the psychology of the Negro. This has been expressed violently but beautifully by E. Franklin Frazier in his *Black Bourgeoisie*

[6]The Sociological Principle—consciousness of kind—played an important role in this development.

[7]It may seem strange for so young a group of Negroes to think in profound relationships. During the post World War II years a class of 10-year-olds were asked the proper punishment for Hitler—the answer was: Paint him black.

Summary

The primary purposes of the state and city educational institutions are to enable a citizen to become sophisticated with various techniques which will become conducive to positive personal and social ends.

The methods which are used in the hiring of the school personnel are in conflict with their purposes. The study shows that it is difficult for a white counselor to create an atmosphere wherein a Negro could gain insight.

The fundamental principle of counseling—to view the social or personal field as the counselee does—is difficult to attain in such a situation.[8] The white person can only imagine, but never know, how a Negro thinks and feels, or how he views a social or personal situation. The cultural lenses which are formulated from unique milieus are not as freely transferable as it is assumed, or as we are led to believe.

Since the Negro occupies such a prominent position in the public schools, and our purposes are to enhance his personal and social sophistication for, or towards, positive ends, we should utilize our research and direct our policies toward such ends.

Our hypothesis was tested and found that white counselors cannot successfully counsel Negro pupils because of the barriers they cannot penetrate.

[8]Dr. H. Cantrill in his lectures at the University of Southern California, March 1959, pointed out that different persons do not see the same situations differently, they see completely different situations.

Selected Psychometric Characteristics . . .

(Continued from page 184)

standardized psychological tools and techniques in an attempt further to define patterns of personality components of home economics majors as distinguished within the field from one major to another; (3) that the Department make further studies of the application of the theory of differential patterns of traits and factors among the various sequences in home economics to counseling students toward or away from one or another area of specialization in the home economics major and to its recommendations for placement.

Research News and Views

Harry Smallenburg, Director, Division of Research and Guidance, Los Angeles County Schools, was chosen as the Sixth Lecturer of the Delta Epsilon Society of the University of Southern California. Dr. Smallenburg is well-known in California because of his participation in professional activities and writings. It is especially appropriate that he has received this lectureship, since the Society's award is made on the basis of "outstanding contributions in the field of education."

Harold L. Weeks, formerly Supervisor of Research and Guidance for the San Bernardino City Schools, has just assumed the position of Director, Bureau of Research, San Francisco Unified School District, replacing the recently retired Dr. Lillie L. Bowman. *(See page 171.)* He has also become a member of the California Advisory Council on Educational Research, the sponsoring agency of the *CJER*.

Mr. Weeks, who filled his former post in the San Bernardino system since 1952, has an extensive background in the fields of testing and guidance, as well as educational research. His experience includes the following: Clinical Psychologist, U.S. Army Basic Training Camp, 1950-52; Fellow, American Educational Research Association, Columbia University, 1949-50; Counselor in Charge of Testing, San Francisco City College, 1947-49; Counselor, Veterans Counseling Center, San Francisco Unified School District, 1946-47. While serving in the U. S. Army between 1941-45, Mr. Weeks was an Army Specialized Training Program Classification Officer and Clinical Psychologist, Army Neuropsychiatric Hospital. He has also at various times taught university extension courses in Guidance and Measurement at the University of California, Berkeley, and the University of Southern California.

Mr. Weeks is completing his doctorate in Educational Measurement at the University of Southern California. Originally from Topeka, Kansas, the new San Francisco Research Director received his A.B. degree from the University of Southern California in 1938 and his Master of Education degree from Harvard University in 1941.

Henry Magnuson, Chief, Bureau of Education Research of the State Department of Education and charter member of the Advisory Council, was named interim President of Long Beach State College by Dr. Roy E. Simpson, Superintendent of Public Instruction. Dr. Magnuson served in this capacity from July to September, when Dr. Carl McIntosh, former President of Idaho State College, assumed the position.

Hunches and Research . . .

(Continued from page 146)

mesh in the woven-wire fence, and through the same mesh dozens of times, without system or foresight.

Another type of foul thinker is even worse than the chicken. This person jumps over not only steps 3, 4, and 5, but also over 6, and announces "the answer" to a problem he doesn't even understand. Nay more, he denounces any suggestion that he diagnose the problem, consider other possible answers, cogitate on the implications of the several possibilities, and gather data.

The Place of the Hunch

The difference between systematic and foresighted problem solving, as opposed to helter-skelter trial and error, lies in Kilpatrick's steps 3, 4, and 5. Those steps, thoughtfully pursued, culminate in a theory or hypothesis or presumably most likely answer—or hunch. A hunch, in research procedure, is that theory which seems to the researcher to be the most promising prospect. It is arrived at only after careful study and thorough understanding. It is not something which occurs offhand to a dilettante. And it is not yet known or alleged to be known to be the answer. It is the top-ranking and foremost thoughtfully determined theory, to be verified or discredited by valid and reliable data which are carefully gathered and evaluated.

Intuition is a term which has been used carelessly to identify this same thing. Intuition has been presumed to be a royal road to infallible knowledge, especially in religious and mystical revelation. "But insofar as intuition turns out to be reliable," says Lamont,[2] "it is simply very nimble sense perception or thinking that penetrates to the heart of a situation with more than usual speed. . . . Intuition at its best amounts to nothing more than making a good, quick guess—having a 'hunch' in the popular idiom—which may prove to be correct, but which always requires verification."

Such a good and great man as George Bernard Shaw is reported to have tripped up in the confusion. When told of Pavlov's dog, the Irish wit is alleged to have said, "If the fellow had come to me, I could have given him that information in less than twenty-five seconds without tormenting a single dog." Had Shaw been of a scientific turn of mind, he would have said, "I have the same hunch as yours. Let us experiment." Then whatever research he did would have been worth the effort, because it would have

[2]Corliss Lamont, *Humanism as a Philosophy*. New York: Philosophical Library, 1949, p. 234.

removed his conclusion from the area of speculation to that of demonstrable fact.

Limitations of the Hunch

Experimenting or gathering data in other ways pursuant to the most promising possibility has the virtue of being a timesaver. It also is more exciting than blind muddling through trial and error. But there are dangers or limitations in the scientific pursuit of hunches. The mere recognition of each such danger, however, should be enough to dispel it. It is in failing to recognize the dangers and limitations that mischief is done.

1. The Shavian error of jumping from Kilpatrick's fifth step to his seventh—announcing answers to problems without supporting data; accepting hunches as conclusions—is perhaps the commonest danger in the hunch realm. But it lies outside of "scientific pursuit of hunches." Jumping at conclusions is not a part of scientific method.

2. Overzealousness in the pursuit of a hunch can lead to dishonesty or to warped judgment. The overzealous researcher, in gathering his data, can load the dice, wilfully or unwilfully, to prove his theory. Or if he has complete, valid, and reliable data, he can draw biased conclusions while blinded by his hunch. Bias in research is not inherently bad. In fact, it is almost inevitable. But it leads to error if the researcher is not on guard in maintaining strict honesty and objectivity.

3. To assume that all research must include the scientific pursuit of hunches is a third fallacy. The greater difficulty of some problems can keep investigators from formulating workable hypotheses. Or the nature of a problem can do the same thing. To forego research simply because no workable hypothesis presents itself is folly. A courageous researcher will go ahead and accumulate data anyhow and evaluate them for whatever conclusions they may warrant. Historical research is especially likely to be in this category.

There is a good way and a bad way to do research. The good way is to think the problem through before starting to gather data. The bad way is to use a trial-and-error process. The good way often will involve verifying or disproving a hunch, but it may not do so. A hunch is serviceable as a clue but not as a conclusion, and it must not be allowed to bias the collection or evaluation of data. Like most things in life, a hunch can be either a help or a hindrance, depending on the competence and integrity of the researcher.

Relationships Between Two Types of Verbal Ability

(Continued from page 179)

is considered to be a desirable characteristic of a teacher, the instruments used in this study can be employed profitably for screening, guidance or training purposes.

The findings of the present investigation should in no respect be generalized beyond the population involved, but this study does suggest some possible investigations in the field of communication and teacher-trainee selection.

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Dr. Arthur P. Coladarci, Professor of Education and Psychology, Stanford University, and a member of CACER, is again visiting the Far East. Dr. Coladarci is representing the American Educational Research Association and the California Educational Research Association at the International Conference of Educational Research in Tokyo. He plans to return to his regular duties in the latter part of September.

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